


IN THE CLAIMS:

 Please cancel Claims 1-26, 32-38, 40-61, and 63-66 without prejudice.

Please amend the following claims:

A 2  
27. (Amended) A mutant TSH heterodimer comprising (a) a TSH  $\beta$  subunit joined via a peptide bond at its carboxyl terminus to the amino terminus of the carboxyl terminal extension peptide of human chorionic gonadotropin; and (b) an  $\alpha$  subunit, wherein at least the TSH  $\beta$  subunit or the TSH  $\alpha$  subunit contains at least one amino acid substitution;

wherein the bioactivity of the mutant TSH heterodimer is greater than the bioactivity of wild type TSH heterodimer; and wherein the at least one amino acid substitution is in amino acid residues selected from among positions 11-21 of the amino acid sequence of human  $\alpha$  subunit as depicted in Figure 1 (SEQ ID NO:1).

28. (Amended) A mutant TSH heterodimer comprising (a) a TSH  $\beta$  subunit joined via a peptide bond at its carboxyl terminus to the amino terminus of the carboxyl terminal extension peptide of human chorionic gonadotropin; and (b) an  $\alpha$  subunit, wherein at least the TSH  $\beta$  subunit or the TSH  $\alpha$  subunit contains at least one amino acid substitution;

wherein the bioactivity of the mutant TSH heterodimer is greater than the bioactivity of wild type TSH heterodimer; and wherein the at least one amino acid substitution is in amino acid residues selected from among positions 58-69 of the amino acid sequence of TSH  $\beta$  subunit as depicted in Figure 2 (SEQ ID NO:2).

AB  
30. (Amended) the mutant TSH heterodimer of claim 27 comprising a mutant human  $\alpha$  subunit and a mutant human TSH  $\beta$  mutant subunit, wherein the mutant human TSH  $\beta$  subunit comprises at least one amino acid substitution in amino acid residues selected from